

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow. This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

I. Introduction

On form PTO-326, claims 1-2 have been checked as being allowed, while in the Office Action, claims 1-2 were rejected under § 103(a). Applicants believe that form PTO-326 contains a typo and respectfully request clarification in the next Office Action.

Applicants filed a certified copy of the Japanese Priority Document on 12/21/01. Applicants respectfully request that the examiner acknowledge receipt of this document in the next Office Action.

Claims 1-5 and 18-19 are currently being amended. Claims 6-17 and 20-29 are withdrawn from consideration. Claim 30 is being added. Support for claims 2 and 30 may be found, for example, on page 20, first paragraph, and page 22, first full paragraph. No new matter was added. After amending the claims as set forth above, claims 1-30 are now pending in this application.

II. The § 112 Rejections Should Be Withdrawn

Claims 3-5 and 18-19 have been rejected under § 112, ¶¶ 1 and 2, as being non-enabling and indefinite. In response, claims 3 and 18 have been amended to recite that the composite is a dummy wafer and claims 4 and 19 have been amended to recite that the composite is a heat treatment member, according to the examiner's helpful suggestion. Claim 5 has been rewritten in independent form to have the same limitations as amended claim 1, except that it recites a transitional phrase of "consisting essentially of". Applicants submit that claims 3-5 and 18-19, as amended, satisfy § 112, ¶¶ 1 and 2.

III. The § Objection to Specification Should Be Withdrawn

The specification has been objected to and the examiner requires a new substitute specification. Applicants respectfully submit that the as-filed specification is written in proper idiomatic English and that no substitute specification is required. The examiner points to page 8, paragraphs 2-3 and page 12, paragraph 2, and page 13, last paragraph as containing informalities. Applicants respectfully submit that these portions of the specification are correct and do not contain informalities.

Page 8, paragraphs 2-3 recites that the composite with a silicon carbide film on a surface thereof constitutes a dummy wafer. Thus, this portion of the specification states that in one embodiment of the invention, the composite with the film is a dummy wafer. Applicants submit that this statement is correct and is not an informality. Claims 3 and 18 were clarified to be commensurate with the disclosure in the specification.

Page 12, paragraph 2 and page 13, last paragraph recite that the composite with fibers having a length of greater than 0.8 mm is used as a semiconductor heat treatment composite or member. These parts of the specification are consistent with page 7, paragraph 3 and page 11, paragraph 2 of the specification, which recite that the composite is used as a heat treatment member. Applicants submit that this statement is correct and is not an informality. Claims 4 and 19 were clarified to be commensurate with the disclosure in the specification.

Since the Office Action did not identify any other parts of the specification that allegedly contain informalities, applicants respectfully submit that a substitute specification should not be required.

IV. The § 103(a) Rejection Should Be Withdrawn

Claims 1 and 2 have been rejected under § 103(a) as being obvious over USP 6,258, 737 to Steible. This rejection is respectfully traversed. Steible does not teach or suggest all elements of claim 1.

B

A. Film Thickness

Steible does not teach or suggest that the silicon carbide film thickness is 30 to 500 microns.

Referring to column 5, lines 4-25 of Steible, the Office Action points out that Steible discloses that the silicon carbide film on the fibers has a thickness of only 0.1 to 4.0 microns. Steible provides no motivation to increase the thickness of this film to 30 microns, which is more than a factor of seven increase in size, since it is not simply a matter of routine optimization, as suggested by the Office Action.

As provided in the last two paragraphs on page 12 of the specification, the present inventors have recognized that a film thickness of 30 to 500 microns provides a sufficient corrosion resistance while reducing or preventing film exfoliation.

Steible does not recognize this effect of the thickness of the silicon carbide film. As mentioned above, Steible fails to disclose or suggest the silicon carbide film coated on the silicon/silicon carbide composite with a sufficient thickness to obtain a desired corrosion resistance.

B. Fiber Length

Steible also does not teach or suggest that the fiber length is 0.8 to 3.5 mm, as recited in claim 1.

Steible notes in col. 2, lines 61-64 that the fibers are bundled in tows and continuous lengths of equal or greater than 1 centimeter. This length is greater than the 3.5 millimeters recited in claim 1.

As provided on page 12, third paragraph of the present specification, if the length of silicon carbide fibers exceeds 3.5 mm, the industrial production of the fibers becomes difficult. Thus, when silicon carbide fibers exceeds 3.5 mm, the silicon/silicon carbide composite has a tendency to partially develop into an anisotropic structure to make the coefficient of thermal expansion uneven throughout the whole composite structure. If the

silicon carbide film with a thickness of 30 to 500 microns is formed on the surface of such composite and the composite is heated at a high temperature, then compression stresses and tension stresses are formed within the silicon carbide film. This results in defects such as cracks, which can arise out of thermal stress differences when the silicon/silicon carbide composite is in use. Further, if the length of the silicon carbide fiber is less than 0.8 mm, the silicon/silicon carbide composite does not have a sufficient mechanical strength required in practical use thereof, as provided in paragraph 2 on page 12 of the present application.

Steible does not recognize this effect of fiber length. Thus, the fiber length is not a matter of routine optimization.

In this respect, the silicon/silicon carbide composite according to claim 1 is free from the above discussed problems because it has a high heat stress (thermal shock) resistance as well as a sufficient mechanical strength. Further, the silicon carbide film having the claimed thickness provides the member with a high corrosion resistance and durability.

C. Claim 2

Amended claim 2 recites that the silicon/silicon carbide composite has the amount of carbon left without reaction at 0.25 wt% or less. If the amount of carbon left without reaction in the silicon/silicon carbide composite exceeds 0.25 wt%, the density or other properties can substantially vary in some portions thereof to cause heat stress to concentrate to such portions, thus giving rise to formation of cracks in boundary portions thereof.

Steible does not teach or suggest this limitation or even recognize it as a result effective variable. Thus, there is no motivation to optimize the amount of carbon left without reaction in the material of Steible.

D. Claim 5

Claim 5 recites that the silicon/silicon carbide composite consists essentially of the recited elements. For example, the claimed composite lacks carbon particles or silicon carbide particles, which are present in the composition of Steible. These particles are excluded from

the claimed composition because they materially affect the basic and novel properties of the composition of claim 5. MPEP § 2111.03. If carbon particles are present in the claimed silicon/silicon carbide composite, the composite tends to have cracks therein due to its expansion when subjected to high temperature use. If silicon carbide particles are present, it is difficult to obtain a homogenous contexture thereof.

Steible discloses aligned tows of silicon carbide-containing fibers, each fiber coated with slurry composition comprising at least one high char yielding resin selected from a carbon forming resin or a ceramic forming resin or a mixture of both, and carbon particles and silicon carbide particles. Thus, claim 5 excludes the composition of Steible from its scope.

V. Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

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By 

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The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. § 1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.